

SUPPORT FOR THE AMENDMENTS

Newly-added Claims 26-28 are supported by the specification and the original claims. Accordingly, no new matter is believed to have been added to the present application by the amendments submitted above.

REMARKS

Claims 17-28 are pending. Favorable reconsideration is respectfully requested.

Applicants would like to thank Examiner Eoff for the helpful and courteous discussion held with their representative on February 22, 2011. During the discussion, the differences between the claimed process and the cited references were discussed. The following remarks expand on the discussion with the Examiner.

The present invention relates to a process for producing a purified resist polymer solution, comprising:

(1) dissolving a solid product comprising a resist polymer comprising a repeating unit decomposable by, and becoming alkali-soluble by, the action of an acid and a polar group-containing repeating unit, in a solvent (b) comprising one or more solvents selected from the group consisting of acetone, methyl ethyl ketone, tetrahydrofuran, ethylene glycol dimethyl ether, and ethyl acetate, and

(2) evaporating from the solution obtained in (1) the solvent (b) while adding, under reduced pressure with the temperature being controlled at 70°C or less, a solvent (a) comprising one or more solvents selected from the group consisting of propylene glycol monomethyl ether acetate, ethyl lactate, cyclohexanone, methyl amyl ketone, diethylene glycol dimethyl ether, diethylene glycol monoethyl ether, and γ -butyrolactone,

where the boiling point of solvent (b) is not higher than the boiling point of solvent (a) at atmospheric pressure, and

where the amount of impurities having a boiling point at atmospheric pressure of not more than the boiling point of the solvent (a) is 1 mass% or less of the resist polymer in the purified resist polymer solution.

See Claim 17.

The present invention is based on the discovery that the use of a specified solvent (b) and a specified solvent (a) can reduced the amount of impurities in a resist polymer solution. See the specification at page 15.

The rejections of the claims under 35 U.S.C. §103(a) over Sounik et al. in view of Schm, further in view of Zampini et al., and further in view of Burch et al. and Haubold et al., are respectfully traversed. The cited references fail to suggest the claimed process.

Sounik et al. describe a liquid phase process for preparing polymers. See the Abstract. See also the preambles of Claim 1 and 19 of Sounik. Thus, in the process described by Sounik, the polymer remains in solution during the six (6) processing steps. See paragraph [0021] of the reference.

In contrast, the claimed process begins with dissolving a solid product comprising a resist polymer in a solvent (b) comprising one or more solvents selected from the group consisting of acetone, methyl ethyl ketone, tetrahydrofuran, ethylene glycol dimethyl ether, and ethyl acetate, as set forth in (1) of Claim 17. Sounik fails to disclose or suggest this step. Rather, in Sounik, the polymer is made in a alcohol solvent in step (1) (see paragraph [0101] of the reference) and maintained in solution during the subsequent processing steps. The reference also fails to suggest evaporating from the solution obtained in (1) the solvent (b) while adding, under reduced pressure with the temperature being controlled at 70°C or less, a solvent (a) comprising one or more solvents selected from the group consisting of propylene glycol monomethyl ether acetate, ethyl lactate, cyclohexanone , methyl amyl ketone , diethylene glycol dimethyl ether, diethylene glycol monoethyl ether, and γ -butyrolactone (see (2) of Claim 17), in combination with the dissolving set forth in (1) of Claim 17.

Sehm describes a solvent exchange process for carbonyl containing polymer slurries. See the Abstract. Sehm fails to disclose a process involving the combination of solvent (b) in (1) and solvent (a) in (2) as set forth in Claim 17.

Zampini et al. disclose a phenolic resin purification process. See the Abstract.

Zampini et al. fail to disclose or suggest evaporating from the solution obtained in (1) the solvent (b) while adding, under reduced pressure with the temperature being controlled at 70°C or less, a solvent (a) comprising one or more solvents selected from the group consisting of propylene glycol monomethyl ether acetate, ethyl lactate, cyclohexanone, methyl amyl ketone, diethylene glycol dimethyl ether, diethylene glycol monoethyl ether, and γ -butyrolactone, as set forth in Claim 17.

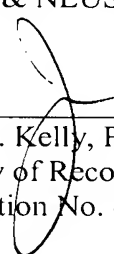
Burch et al. and Haubold et al. fail to disclose a process involving the combination of solvent (b) in (1) and solvent (a) in (2), as set forth in Claim 17, and, therefore, fail to remedy the deficiencies of the references cited above.

In view of the foregoing, the claimed process is not suggested by the combination of references set forth in the Office Action. Accordingly, the subject matter of the pending claims is not obvious over those references. Withdrawal of these grounds of rejection is respectfully requested.

Applicants submit that the present application is in condition for allowance. Early notice to this effect is earnestly solicited.

Respectfully submitted,

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